[HELP ?]

Comparison of eight microcomputer dietary analysis programs with the USDA Nutrient Data Base for Standard Reference

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Abstract:
A nutrient database was evaluated by comparing the nutrient analysis output with the 1993 USDA Nutrient Data Base for Standard Reference, release 10, for microcomputers.

Full Text:

The number of computer software programs for use in the nutrition and dietetics field has increased markedly since descriptions of computer applications first appeared in the literature in the late 1950s (1). Several hundred programs are available for delivering a variety of nutrition services, including patient interviews, counseling, menu planning and forecasting, documentation of care, nutrition education, research, productivity assessment and employee scheduling, production scheduling and equipment use, nutrition assessment, and nutrient analysis (2-5). One of the most widespread applications of computer technology in dietetics is computerized dietary intake analysis, which has become an important skill for dietitians to master (2).

Choosing the best system has become complicated by the large number of programs available and differences in the quality of each program's database and operating features. For dietitians, the most important consideration when selecting a dietary analysis program is its nutrient database (3,6). The database must be accurate, well documented, and large enough to perform all intended tasks. Nutrient databases vary among programs depending on the number of food items and nutrients included, whether the most recent US Department of Agriculture (USDA) data have been incorporated, and the degree to which non-USDA sources (such as food industry and scientific literature) or estimated calculations are used to replace nutrient values missing from the database.

Other important operating features include the ease and speed with which food items can be entered into a program; quality of the user's manual and help screens; ability to preview single food nutrients while entering foods; ability to assign different volume or weight measures to food items; ease of editing the food list; limit in number of food entries; ease of averaging multiple days of dietary input; and ability to compare results with a variety of dietary standards. Dietitians also need to consider the program's cost and ability to print a variety of reports and export data. The inability of a program to export data is a distinct disadvantage for users wishing to analyze data statistically.

Although several nutrition periodicals and journals regularly review general features of microcomputer dietary analysis systems, very few comparative analyses have been published (7-15). In recent years dietary analysis programs have become more sophisticated, requiring a more powerful computer and more memory and hard drive space in order to operate at an acceptable speed. We chose eight popular programs for evaluation to help practitioners in the selection of an appropriate program for dietary analysis in a clinical setting. The operating features of these were evaluated and the database of each

program was compared with the USDA Nutrient Data Base for Standard Reference (NDB) (release 10, full version, 1993, National Technical Information Service, Springfield, Va). This article updates a previously published review of microcomputer dietary analysis programs (7).

METHODOLOGY

Each of the microcomputer systems we reviewed met several selection criteria: a nutrient database of more than 5,000 foods and 20 food components; readily available and marketed nationwide; and willingness of the vendor to cooperate in the research project. In particular, we chose dietary analysis systems that had been reviewed recently in professional journals or periodicals (7,8,16-23), and/or had been advertised in the Journal of The American Dietetic Association.

The eight systems chosen were: Diet Balancer for Windows, version 1.4C (Nutridata Software, Wappingers Falls, NY); DietMax Plus for Windows (Positive Input Corporation, Three Rivers, Mich); Food Processor Plus, version 6.0 CESHA Research, Salem, Ore; Counseling Nutrition Data System, version 2.6 (Nutrition Coordinating Center, University of Minnesota, Minneapolis); Nutrient Analysis System 2 Plus 8, version 1.0 DDA Software, Long Valley, NJ; Nutritionist IV, version 3.5 both MS-DOS and Windows versions) (N-Squared Computing, San Bruno, Calif); Nutritional Software Library IV (Computrition, Chatsworth, Calif); and Food/Analyst Plus, CD-ROM version (Hopkins Technology, Hopkins, Minn).

We prepared a 3-day food record with 73 basic food items. The foods, along with their volume amounts and gram weights, were exactly the same as those in a previous study (7), except in that study nutrient data and food codes for bakery items were taken from a provisional food composition table (24). These items are no longer provisional, but are part of the USDA's regular nutrient database and have new food codes. These foods and their new codes are pancakes, plain, 18290; bread, whole wheat, 18075; crackers, saltine, 18228; English muffin, plain, 18258; bread, French, toasted, 18030; roll, dinner, plain, 18342; cake, angel food, 18088; and cookies, oatmeal, 18184. We selected foods to create a diet conforming to the National Cholesterol Education Program's step 2 diet (25). Only foods that had a separate code number in the USDA NDB were included in the 3-day food record. This was done to facilitate correct identification of all the foods in the food record. Brand-name foods and combination dishes were not included because they are not listed in the USDA NDB. Our purpose was to compare the nutrient output of eight dietary analysis programs with the USDA NDB and the degree of food-item substitutions each program required.

General operating features of the programs were summarized using information from the user's manual provided with each system and data were collected during our use of the software (Table 1). (Table 1 omitted) Each computer program vendor was allowed to review the tables to confirm the accuracy of the information given for its system.

We entered foods from the 3-day food record using the specific gram weight of each food item (except for Diet Balancer for Windows and DietMax Plus, which required volume measures for many foods). When the exact food was not available in a program's database, the closest substitution was used. After we entered foods and reviewed other specific attributes of each program, we graded the operating features of each using a four-level grade system (ie, excellent, good, fair, poor) (Table 2). (Table 2 omitted) Grades were assigned by comparing the eight programs with one another. A grade of "excellent" was given, for example, to those that best accomplished the task in the collective judgment of the three investigators. Microcomputers with a 486/33 MHz central processing unit (CPU) and 8 MB random access memory (RAM) were used to test each of the programs.

Three-day nutrient summaries were printed and results are shown in Table 3. (Table 3 omitted) The nutrient data were compared with the USDA NDB. Percent differences were calculated using the following formula:

microcomputer value-USDA NDB value/USDA NDB value x 100

Because the USDA NDB was not used as a "gold standard" but as a point of reference, the presence of an asterisk in Table 3 does not imply that there is necessarily something unsatisfactory about a program's database. The asterisk highlights a nutrient summary value that differs more than 15% from the USDA NDB.

Nutrient values for each food from the USDA NDB and each program were incorporated into a spreadsheet for comparison. The percent of missing values for each program was determined by counting the number of missing data for all nutrients listed in Table 3 for a particular program, and dividing by the total number of potential data points (73 foods x the number of nutrients listed in Table 3 for the program). A program was not penalized for nutrients not included in its listing. The quality of the nutrient database was given an overall rating on the basis of three factors: total number of foods, total number of nutrients, and percent of missing values.

RESULTS/DISCUSSION

Tables 1 and 2 summarize the general features of each program and Table 3 compares the nutrient output of each with the USDA NDB. The eight programs varied in cost ($50 to $595), number of foods (5,000 to 23,000) and nutrient components in the database (24 to 94), use of non-USDA data and substitution of data for missing values, and number of print/export options. As summarized in Table 2, the two operating features with the lowest grades among the eight systems were "overall speed" and "overall ease of learning and using." Features that most programs performed well included "ease and quality of RDA [Recommended Dietary Allowance (26)] comparison" and "quality of user's manual." Some of the programs took an inordinate amount of time to search for foods in the database or process reports.

In common with other reports (8,10,11,14), we determined that despite the USDA database being the primary source of information for each of the programs evaluated, substantial variation resulted when 73 foods from a 3-day food record were entered and analyzed by each program. One of the problems was that although most programs used the USDA NDB release No. 10, some foods were either deleted or the name of the food was changed enough to make finding the exact food difficult, forcing us to make food substitutions. Also, some programs did not allow us to enter specific gram amounts or even exact volume measurements, which further contributed to error and variation from the USDA NDB standard.

In general, the programs tended to produce results similar to the USDA NDB reference for energy, protein, total fat, and total carbohydrates. For other nutrients, however, the number that varied more than 15% from the USDA NDB differed considerably among programs. The food components from the eight programs that were most likely to vary from the USDA NDB in terms of nutrient value included total tocopherols and alpha-tocopherol, dietary fiber, fatty acids, and cholesterol. Nutrients most likely to be absent from the databases of the eight programs included total tocopherol and alpha-tocopherol, manganese, some amino acids and fatty acids, pantothenic acid, copper, magnesium, and caffeine. A summary discussion of each system based on results shown in Tables 1, 2, and 3 follows.

Diet Balancer for Windows

Diet Balancer for Windows includes about 5,000 foods and analyzes them for 26 nutrient components.

The program costs $50. Foods are selected through food groups and lists, but this process is straightforward because of the compact, attractive working screen. Users have to go through several mouse and keystroke options, however, to search for and select foods and portion size. This should be streamlined in future versions. For some of the larger food groups, users have to wait longer than expected for the food list to appear on the screen, further slowing the search process.

Energy (or a nutrient of choice) is listed instantly after every food entry. Editing and nutrient sorting are easy to perform. Unfortunately, specific gram amounts cannot be entered for all foods, but several other portion size options are usually available for each food (although they are not that easy to select because the mouse [the computer pointing device] had to be used more often than necessary to make on-screen selections of the available portion size options). The database of the Windows version uses USDA Handbooks No. 8-1 to 8-21 with the addition of food composition data from a relatively large number of brand-name foods. Thiamin, vitamin E, and cholesterol values varied more than 15% from the USDA NDB, probably because of food substitutions and imprecise portion size selection. Three-day averaging is basic and quite easy, a spreadsheet of the nutrient information can be viewed on the screen before printing, and an attractive graph with RDA comparisons can also be viewed and printed. Diet Balancer for Windows is available at a low cost, has an attractive screen design, and provides basic nutrient information on approximately 5,000 foods.

DietMax Plus for Windows

DietMax Plus for Windows is a relatively new program developed for dietitians and other health professionals who analyze food intakes of patients or clients or design recipes and institutional menu cycles.

DietMax Plus is a large and complicated program, and one of the few that presently runs on Windows. The program runs most effectively on a 486/33 MHz CPU or faster computer with 8 MB RAM. The database includes about 7,100 foods from many sources including the USDA, fast-food outlets, and labels from commercial, brand-name foods and analyzes them for 54 nutrient components. Stating in the help screens and user's manual that it makes no sense to place foods of all types into a single, large database, DietMax developers separated the database into base foods (for recipes), recipes, or meal items (for menus and client food intake). Unfortunately, only several hundred foods are available by default in the client food intake module. Users can stop and define new intake food items by identifying them from the source database, and transferring them to the intake database. This is a lengthy process, but help screens and the user's manual state that this transfer is usually unnecessary because most practitioners use intake analysis to roughly gauge a client's eating habits, and do not expect extreme accuracy. In other words, unless users take the time to define new intake food items, a relatively high number of food substitutions will have to be made.

Food selection from the small, client-intake database is through food groups. Once the food is selected and highlighted, users must use the mouse to "copy" the food and then "paste" it to the client food listing. Another obstacle is selecting food portion size, which requires using the mouse to push an arrow tab to increase or decrease the portion size by set increments. Although the portion size increment arrows can be sidestepped by using the mouse to "click" in the box and then entering the exact volume measure, amounts in grams cannot be entered. The working screen for all of this is compact and novel, and if the next version allows users to search the entire database by name and enter portion sizes more easily, the entire process of food search and entry will be greatly improved. Switching from day-to-day food entry is easy, 3-day averaging is automatic, and previewing nutrients for single foods or the total diet is simple. Although the processing time for producing reports is lengthy and a spreadsheet cannot be printed, the basic reports are well designed and attractive, and include food exchange groups. DietMax

for Windows is one of the few programs to provide printed reports in color. Missing data, which were calculated at 9.4% for our 3-day menu, are flagged by placing a small asterisk next to the nutrient value. The user manual and help screens are excellent. As shown in Table 3, more than one third of the nutrients analyzed using DietMax varied more than 15% from the USDA NDB reference, more than any of the programs analyzed. This was primarily because of the large number of food substitutions, the difficulty in choosing exact portion sizes, and the substantial amount of missing data.

The Food Processor Plus (version 6.0)

The Food Processor Plus, version 6.0, includes more than 12,000 foods and analyzes them for 94 nutrient components and large variety of nutrient ratios, percents, and other indexes.

The nutrient database is derived from the USDA NDB (release 10) and complemented by more than 1,000 sources, including the USDA Survey Database, USDA provisional data, scientific literature, food manufacturers, and foreign food composition tables. Values are imputed where similar data are available. Only 0.3% of data were missing for our 3-day food record. Data are updated continuously, and food manufacturers are contacted on a regular basis to keep name-brand food data current and to expand the database for emerging products. Cooking and preparation yields are also calculated so that users can enter foods as raw with bone, in dry uncooked form, or with skin or shells, and the program will calculate the cooked and prepared yield of the edible portion.

Food search and entry and food-list editing are quick and easy to perform. Nutrient values for individual food items can be previewed while searching. Food retrieval is very fast, and the "smart search" system allows users to look up foods by name, key word, partial name, or food code number. The printed reports are excellent, and include such special features as food exchange groups and a graph of protein quality. A complete spreadsheet with all nutrients listed for each food can be printed in a compressed format. Personalized messages can be included with printed reports, through a text editor, with results compared to American (26,27) or Canadian (28) standards. Data can be easily imported and exported. Two excellent manuals accompany the software. Help messages automatically appear during use of all phases of the program, providing users with a basic understanding of what keystrokes are necessary.

The Food Processor Plus received the highest number of excellent ratings because of its quality operating features and database. Only one nutrient varied more than 15% from the USDA NDB (total tocopherol), and this was because the Food Processor is one of the few programs to provide total alpha-tocopherol equivalent data (on which the RDA is based). The USDA NDB provides only total tocopherol data, and does not adjust the data by the specific activity levels of the different tocopherols and tocotrienols. Additionally, the USDA NDB has a large number of missing total tocopherol data (86% of our 3-day food menu). Food Processor Plus provides users with nearly complete vitamin E data in total alpha-tocopherol equivalent format.

Counseling Nutrition Data System (version 2.6)

The Nutrition Data System was originally developed by the Nutrition Coordinating Center at the University of Minnesota for use in two major research projects--the Lipid Research Clinics and the Multiple Risk Factor Intervention Trial. The program has been modified for use on microcomputers and customized for use in the ongoing National Health and Nutrition Examination Survey (29-34).

Several versions of this program are available, including the Nutrient Data System 93 ($8,000); Nutrient Data System 32 $2,550; and the Counseling Nutrient Data System, version 2.6 ($595). Although most users are medical researchers in North America, version 2.6 is also used by dietitians desiring

research-quality results. The Counseling Nutrient Data System includes more than 23,000 foods and brand-name foods. Additional prompts allow users to describe more than 160,000 possible variants of foods. The nutrient database for the Counseling Nutrient Data System provides complete information on 32 nutrients and components and 9 nutrient ratios/percents for each food item. The program is continually updated using current information from the USDA, scientific literature, food manufacturers, and international food composition tables. Values are imputed when none are available using published procedures (34). Missing values are only tolerated when no information is available to indicate whether a nutrient is present in a food, the value is believed to be negligible, or the food is usually eaten in very small amounts. The database has less than 3 missing values. No missing data were found for the 3-day food record. More than 350 food manufacturers are contacted annually by the Nutrition Coordinating Center to obtain updated nutrient and ingredient information for more than 7,000 products.

Prompts, messages, and help screens guide users through all phases of the program. An important feature is the interactive system prompting users to select appropriate answers regarding specific quantities and qualities of food and preparation methods. Although this slows food entry, users receive research-quality nutrient data. Editing the food list is very easy. Version 2.6, however, does not allow a preview of nutrient information during food search and entry, and the spreadsheet can print only five nutrients at a time. The software program is designed for analyzing 1-day food records, recalls, recipes, and dietary histories. Analyzing multiple-day food records is unwieldy because it requires using a separate software module. The program would benefit from a master menu that controls all software functions. The Nutrition Coordinating Center is rewriting the software operating features to make it more user-friendly.

As with Food Processor Plus, the Nutrition Data System is one of the few systems providing total alpha-tocopherol equivalent data so that nutrient output can be compared directly with the RDA. Vitamin A values tended to be lower than the USDA NDB because values for raw carrot were 45& lower (1,112 mu-g RE [RDA] vs 2,025 mu-g RE [USDA NDB] for 72 g raw carrot). However, this system has chosen to use non-USDA data that are based on an analysis technique that gives more valid but lower vitamin A values for carrots and other vegetables (35). This is an excellent example of why variance from the USDA NDB should not necessarily be construed as negative. Instead it represents the computer developer's effort to provide accurate or additional information.

The Counseling Nutrient Data Systems has one of the most comprehensive food lists and complete databases of the programs reviewed and is suitable for research-quality dietary analysis. The software is a bit difficult to use because of the lack of an overall menu system, but it has an excellent user's manual, help screens, and a unique probing system to ensure proper data input.

Nutrient Analysis System 2 Plus 8 (version 1.0)

The Nutrient Analysis System 2 Plus 8, version 1.0, has about 8,000 foods in its database and analyzes them for 79 nutrient components. This program has all of the basic features expected in a dietary analysis system. Because this program uses USDA NDB food codes, the 3-day nutrient summary varied little from the USDA NDB, except for an error introduced because of inexact gram portion size selection and mathematical precision.

Editing the food list was easy, especially through a listing of the code numbers. We encountered problems with such operating features as food search and entry and averaging the 3-day food record. A food search is conducted through food groups, is limited to 40 foods, and requires more keystrokes than most other programs to complete each selection. Three-day averaging is difficult because it requires extensive use of the manual and line-by-line deletion and then addition. Once the 3-day average table is obtained, it can be viewed on the screen, but not printed out except in chart or bar graph form (with most

weight summary values deleted). Although nutrients can be viewed on the screen by groups, 3-day nutrient summaries could not be obtained for all nutrients. Consequently, this program received a fair rating for program operation.

Nutritionist IV (version 3.5)

Nutritionist IV, version 3.5, includes more than 12,000 foods and analyzes them for 75 nutrient components. The nutrient data are based primarily on all available USDA data, and are complemented by information from a large variety of scientific journal and industry sources. Nutritionist IV, version 3.5, is now available for MS-DOS and Windows. Although both programs use the same database, operating features and printed reports differ in ease of use and quality.

Nutritionist IV (MS-DOS).has many special features such as the ability to calculate the number of food exchanges for the diet record data, to print the Food Guide Pyramid with food-group recommendations, to print default or personalized reports using a text editor, to analyze food frequency lists, and to print a variety of nutrient sorts. Printed reports are very attractive. The program has an excellent user's manual and good help screens. A "smart search" feature simplifies food searches.

Although the database is quite extensive, we did find 5.6% missing data for the 3-day food record, and more than 15% variance from the USDA NDB for dietary fiber, total and alpha-tocopherol, oleic acid, and cholesterol. This was primarily because of missing data and differences in nutrient values for some of the foods.

Nutritionist IV received a "poor" rating for processing speed because of the excessive time to process reports and graphs. Editing was difficult to understand without use of the manual. Although users can preview nutrients for a default portion size during food search and entry, it is not possible to preview nutrients for the exact portion size entered until the spreadsheet is printed.

We encountered difficulty freeing enough conventional RAM to avoid memory drains during operation. Even though we used a computer with 8 MB RAM, the MS-DOS version of Nutritionist IV only uses conventional RAM. About 560 KB of conventional RAM is recommended, but with many newer systems this is difficult to achieve. We found the program's built-in memory optimizer to be of little help. The Windows version did not have these memory problems.

Nutritionist IV has some very special features as well as a large database. However, the program has become so large and complicated that the processing speed is slow (even with a 486/33 CPU). In addition, memory-drain problems are common. Nutritionist IV version 4.0 was recently released and, according to the manufacturer, has been completely revised with particular attention paid to program speed, memory use, and work flow.

Nutritional Software Library IV

The Nutritional Software Library IV by Computrition, includes more than 18,000 foods and analyzes them for 24 nutrient components. Included within the software library are several programs: dietplan, to plan a balanced menu; intake, to analyze nutrient content of diets; nutribold, to build an index or recipe; nutrirec, to determine the nutritional content of recipes; and profile, to establish a plan for weight loss or weight gain.

Because the database has a relatively large number of missing values (7.9% for the 3-day food record), folacin and three fatty acids varied more than 15% from the USDA NDB. For example, values for

saturated, monounsaturated, and polyunsaturated fatty acids were missing for pancakes, margarine, some salad dressings, and cured ham. The program has a limited number of print options, and the spreadsheet which only prints 20 nutrients at a time) must be printed on a wide-carriage printer or in landscape format on a laser or ink-jet printer.

Program operating procedures are onerous, requiring the manual and help screens to navigate through various command structures. Editing is also difficult, requiring an unusually large number of keystrokes. Food search is by name only, with users forced to type a number corresponding to the food list on the screen. Previewing the nutrients in each food is simple and can be adjusted to the exact portion size entered. Averaging 3-day intakes required more keystrokes than most programs and it was not easy to accomplish this task.

Overall, the Nutritional Software Library has a large food list, but only 24 nutrient components and a relatively high number of missing values. The program could be made more user-friendly by using a menu system that avoids excessive keystrokes.

Food/Analyst Plus (CD-ROM)

Food/Analyst Plus from Hopkins Technology is one of the few programs taking advantage of CD-ROM technology. The database contains 22,500 foods divided separately into the USDA NDB release No. 10, the USDA survey database, and the Canadian Nutrient File (in French and English). Also included are more than 8,000 brand-name foods from about 160 food manufacturers and restaurants. This program analyzes for 84 nutrients, although the number varies from one database to the other. The Sante CD-ROM program (only $60) is also available from Hopkins Technology and contains 18,000 foods and 30 nutrients.

We found Food/Analyst Plus to be user-friendly, extremely fast, and fun to use. Food search and entry is easy, although nutrient previewing is not available. Editing and averaging a 3-day food record is simple. The number of print options is limited, and printing the RDA graphs is difficult. Food lists, spreadsheets for entire meals, and tables of all nutrients with RDA percent comparisons can be printed with ease. Although the entire database can be sorted by specific nutrients, diets that have been entered cannot be sorted.

Because missing data are not imputed or filled in, the database has a relatively high number of missing values (15.1% for the 3-day menu). Dietary fiber and three minerals were more than 15% below the USDA NDB reference; this was traced to an unusually high number of missing data for bakery items.

The Food/Analyst Plus CD-ROM dietary analysis system received an overall excellent rating for program operating features, although there are still areas for improvement (especially previewing and more print options). Although this system contained one of the largest databases of all the programs compared, the CD-ROM technology resulted in quick and easy searching.

APPLICATIONS

This comparison demonstrated that microcomputer dietary analysis systems vary in operating features, system output, and nutrient database content. Some programs were difficult to use, took an excessive amount of time to search for foods or process reports; and were unable to adjust food portion sizes to specific gram or volume amounts. Some programs placed a heavy demand on computer hardware requirements, or required Windows or a CD-ROM drive.

Variance between programs for 3-day food record nutrient values can be attributed to differences in the number of foods included in each program's database (leading to varying degrees of substitution when foods were entered) and the number of nutrient values missing from the database (the degree to which non-USDA sources or imputed data were substituted for nutrient values missing from the USDA NDB).

This type of comparison has limitations. The 3-day food record consisted primarily of common, basic food items. We purposely avoided using recipes or food items not found in the USDA NDB. Obviously, much greater variation between dietary analysis systems would have occurred had combination foods, recipes, and brand-name products not found in the USDA NDB been used.

Variance from the USDA NDB is related to several factors. The USDA NDB itself has 7.9% missing values, primarily because of incomplete nutrient information for certain nutrients (especially total tocopherol, alpha-tocopherol, copper, manganese, amino acids, and some fatty acids). Thus, the USDA NDB is incomplete, and cannot be regarded as a gold standard. Although some dietary analysis system developers attempted to fill in the missing data using other sources or imputed values, others failed to go beyond the basic USDA standard.

Developers of dietary analysis software will continue to be challenged by the release of new or updated USDA nutrient data, by rapid change in the food industry (eg, mergers and acquisitions, new product introductions, and development of new ingredients and technologies), and by consumers who change their food attitudes and behavior (36). During the mid-1980s, about 6,000 new food products were introduced annually. Recently, that figure rose to 13,000 each year (36). The best software vendors attempt to provide their customers with database updates at least once a year to keep pace with these rapid changes. These vendors network with food companies to update brand-name food composition data and use a variety of non-USDA sources for information on missing data. Until there is a nutrient database that is adopted as the standard and made available to all vendors, the databases of dietary analysis programs will continue to vary, leaving dietitians with the responsibility of carefully choosing a program that is suitable to their specific needs and tasks.

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DIET *SOFTWARE* *CAN* *HELP* *BURN* *CALORIES*
Sunday, August 30, 1992
Word Count: 613

DESCRIPTORS: HEALTH; *DIET*; COMPUTER; *SOFTWARE*; PROGRAM; REVIEW
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DIET *SOFTWARE* *CAN* *HELP* *BURN* *CALORIES*
San Jose Mercury News (SJ) - Sunday, August 30, 1992
By: JACK WARNER, Cox News Service
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TEXT:
Nutrition-conscious people who have personal computers *can* choose among
several programs to make careful tracking of their family's *diet* much
easier.

   My wife and I looked at three programs: *Nutri*-Calc, from Camde Corp.;
Diet Balancer, from Nutridata; and Health and *Diet* Pro, from Digital
Systems Research. A fourth, *Diet* *Analyst* from Parsons Technology, is
identical to *Diet* Balancer.

Like financial programs that tell you where your money went, *diet*
programs tell you where the fat is coming from. If you tell the program
what you have eaten that day, it will tell you not only how many *calories*
, but also how much fat, how much calcium, how many vitamins, and the
percentage of each in your total intake. Various charts and graphs compare
your intake with pre-established goals.

 All the programs come with data bases containing at least 1,500 foods --
everything from an asparagus spear to a Burger King Whopper. You *can* also
add your own recipes.

  All three programs start with a personal profile: name, age, sex, and for
women, pregnant or lactating. *Nutri*-Calc asks you to fill out a 24-hour
activity schedule (how much time you spend sleeping, eating, sitting
quietly, exercising -- what kind and how strenuous, etc.). *Diet* Balancer
and Health and *Diet* merely ask you to rate your activity level -- light,
moderate, strenuous -- and then add your exercise.

   Diet Balancer is the only one of the three that asks for your height
and your overall weight goal; it also asks how much you would like to lose

each week, one pound or two. Health and *Diet* asks how much you would like to lose each week but doesn't ask for a projected weight. *Nutri*-Calc asks only how much you weigh now.

All three allow you to set your own goals in terms of *calories*, fat intake and so forth. If you want to lose weight using *Nutri*-Calc, you *can* figure out on your own how many *calories* you *can* have a day and control the program from that standpoint.

My wife decided she wanted to lose a pound a week. Health and *Diet* suggested 1,800 *calories* per day, which she felt was much too high, considering age and exercise level, while *Diet* Balancer recommended a more reasonable 1,570.

Nutri-Calc and Health and *Diet* were fairly close in their analysis of her vegetable-beef soup, entered as a pound of lean beef, four potatoes, seven carrots, one onion and a 28-ounce *can* of tomatoes, for a total of 10 servings. *Nutri*-Calc came up with 200 *calories* and seven grams of fat, and Health and *Diet* saw it as 189.5 *calories*, 6.85 grams of fat. *Diet* Balancer reported 157 *calories* and three grams of fat.

In terms of ease of use, none of these programs is fully baked. *Nutri* -Calc's manual is the only one with an index. It is also the only one to use a speed-scroll technique for finding a food in the data base: You just type in the name of the food, and the program finds it.

The other two use food groups. For instance, to add potatoes to the vegetable soup recipe, you must first select vegetables, then rummage around for "potatoes boiled w/skin."

Health and *Diet* is the only one of the three that automatically shows a running total of *calories* and fat as you construct a daily menu.

Nutri-Calc and *Diet* Balancer allow you to use your own measurements, but Health and *Diet* is rigid: Under sugar you have a choice of cup, packet or tablespoon. If your recipe is different, then you have to use multiples or fractions of those quantities.

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